Space Weather Forecast

Issued on Wednesday 26 March 2025 at 01:00 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor geomagnetic storms likely, chance of Moderate geomagnetic storms days 1 and 2, reducing thereafter.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low in the past 24 hours. The largest flare was from the southwest at 25/1229 UTC. There are currently five sunspot regions on the Earth-facing disc. All of which are small and magnetically simple. The largest spot is rounding the northwest limb, with a large asymmetric leader, though a complete analysis of this spot is now difficult. All other spots are small and simple at present.

No clear Earth-directed coronal mass ejections were observed, though an eruption on the morning on 25th may give a slight chance of a glance on day 4 (29 Mar), though this is low confidence.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of background conditions with a late increase, likely due to the early signs of a connection to the large coronal hole. Speeds were generally slow-ambient. The Interplanetary Magnetic Field was mostly moderate before becoming strong after 25/2355UTC. The north-south component remained largely weak and variable but became consistently negative after 25/1515UTC. Geomagnetic activity was at Quiet to Active (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low solar activity is expected, with a slight chance of isolated Moderate-class flares over the next four days.

Solar Wind / Geomagnetic Activity: No clear Earth-directed coronal mass ejections feature in the forecast, though an eruption on 25th may give a slight chance of a glance on day 4 (29 Mar), though this is low confidence.

Solar winds are expected to rise from slow-ambient levels, gradually increasing to become slightly elevated then perhaps elevated day 1 (26 Mar), perhaps becoming strong by day 2 (27 Mar) with the expected arrival of a HSS from the unusually prominent coronal hole feature, CH25/+. The

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enhanced geomagnetic activity from the HSS is likely to persist through into day 3 (28 Mar), before beginning to gradually ease by day 4 (29 Mar).

Unsettled to Active conditions initially will likely become G1/Minor storm (Kp5), with a chance of G2/Moderate storms (Kp6) due to CH HSS influences, peaking day 1 or day 2 (26/27 Mar) before easing later day 3 into day 4 (28/29 Mar), becoming generally Quiet to Unsettled (Kp1-3) by the end of the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels, with a slight chance of enhancement from any larger flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	70	60	40	20
Strong	G3	No	15	10	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	20	15	15	15
Very Active	R3-R5 (X Class)	No	1	1	1	1

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	1	1
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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